

Claims

We claim:

1. A filter column for use with collection tubes of different sizes to isolate nucleic acids from a liquid sample, said filter column comprising:

a body having a passageway extending therethrough, said body comprising at least a first body portion, a second body portion, and a third body portion, where an outer diameter of said first body portion is greater than an outer diameter of said second body portion, and where said outer diameter of said second body portion is greater than an outer diameter of said third body portion;

a filter located within said passageway, said filter adapted to isolate nucleic acids from said liquid sample; and

a plurality of bearing surfaces on an outer surface of said body, at least one of said bearing surfaces being adapted to seat on at least one of the collection tube, said plurality of bearing surfaces including at least a first bearing surface located between said first and second body portions, and a second bearing surface located between said second and third body portions.

2. The filter column of claim 1, wherein an inner diameter of said passageway in said first body portion is greater than an inner diameter of said passageway in said second body portion.

3. The filter column of claim 1, wherein an inner diameter of said passageway in said second body portion is greater than an inner diameter of said passageway in said third body portion.

4. The filter column of claim 1, wherein said filter is located within a portion of said passageway in said second body portion.

5. The filter column of claim 1, wherein said filter is located within a portion of said passageway in said third body portion.

6. The filter column of claim 1, further comprising a lid having a portion adapted to be removably seated within a first end of said body.

7. The filter column of claim 6, wherein said first body portion has an annular lip adapted to removably secure said lid portion in a closed position in said first end of said body.

8. The filter column of claim 6, further comprising at least one vent disposed on an interior wall of said body and adjacent to said first end of said body, wherein said vent is in fluid communication with an exterior of said filter column as said lid is adapted to be removably seated within said first end of said body.

9. The filter column of claim 8, wherein said at least one vent comprises four vents.

10. The filter column of claim 6, wherein said lid includes a hinge being integral to said body.

11. The filter column of claim 10, wherein said hinge is offset to said first end of said body.

12. The filter column of claim 1, further comprising deformable ribs protruding from an outside surface of said body.

13. The filter column of claim 1, further comprising a plurality of protrusions on said body and extending radially away from said body.

14. The filter column of claim 1, wherein said outer diameter of said second body portion is selected such that said body is removably locatable within a 1.5 - 2.0 ml centrifuge tube.

15. The filter column of claim 1, wherein each of said bearing surfaces is adapted to seat on respective collection tubes of different sizes.

16. The filter column of claim 1, wherein said outer diameter of said second body portion is between 0.32 and 0.37 in.
17. The filter column of claim 1, wherein said outer diameter of said third body portion is selected such that said body is removably locatable within a 0.5 mL centrifuge tube.
18. The filter column of claim 1, wherein said outer diameter of said third body portion is between 0.25 and 0.27 in.
19. The filter column of claim 1, further comprising a fourth body portion and a fourth bearing surface located between said third body portion and said forth body portion, wherein an outer diameter of said fourth body portion is less than an outer diameter of said third body portion.
20. The filter column of claim 1, having a microliter capacity of greater than 200 microliters, having a filter area of greater than 1,000 mm² and having a height from a top of said body to a top of said second bearing surface being less than 0.5 in.
21. The filter column of claim 1, wherein a first end of said body is adapted to seat a laser capture microdissection extraction device flange.
22. The filter column of claim 21, wherein said laser capture microdissection extraction device flange seats a laser capture microdissection extraction device.
23. A kit for isolating nucleic acids, the kit comprising:
a filter column as described in any of claims 1-22;
at least one collection tube;
a binding buffer, containing a chaotropic agent;
a washing solution; and
an elution buffer.

24. A method for isolating a nucleic acid material comprising:

- providing solution containing nucleic acid material in a single filter column having a filter, where the filter column has a plurality of surfaces permitting the filter column to be secured within at least two collection tubes of different sizes;
- fitting the filter column into a first collection tube;
- transferring the solution containing nucleic acid to the filter of the filter column in the presence of an agent capable of promoting binding of the nucleic acid material to the filter;
- transferring the solution from the filter column to the first collection tube via centrifugal force;
- washing the filter column filter with a wash solution;
- removing the filter column from the first collection tube; and
- placing the filter column in a second collection tube and applying elution buffer and eluting the nucleic acid material from the filter column by centrifugal force.

25. The method of claim 24 wherein said solution containing a nucleic acid material consists of a lysate solution of prepared from biological material disrupted with a disruption solution.